

SPECIFICATION AMENDMENTS

Please replace paragraph [0008] with the following paragraph:

**[0008]** ~~There is currently no suitable method known in the art that is quick and accurate for the detection and analysis of liquid chemical or biological aerosols. Bio-aerosols can be analyzed by bioassay techniques, known to those skilled in the art. However, current bioassay techniques are relatively slow, and would be ineffective for emergency situations. Bio-aerosols can also be detected by ultraviolet (UV) fluorescence techniques. However, the known UV fluorescence techniques have a relatively poor selectivity in identifying man made bio-aerosols from naturally occurring bio-aerosols.~~

Please replace paragraph [0024] with the following paragraph:

**[0024]** The source 14 can be selected so that the wavelength of the radiation beam 20 is in resonance with a particular target molecule or molecules within the cloud 12 being detected. The wavelength of the radiation beam 20 can also be selected to be in resonance with the absorption lines of water vapor or oxygen molecules commonly present in air. The resonance causes the target molecules, water vapor or oxygen molecules to rotate or vibrate which causes their energy to increase. The radiation energy absorbed by the water vapor molecules, the oxygen molecules or the target molecules in the cloud 12 causes the molecules to be is thermalized as a result of collision energy transfer causing inter-molecular relaxation. At atmospheric pressure, this thermalization is very rapid. This collisional energy redistribution results in heating the molecules in the cloud 12. An increase in the temperature of the cloud

12 will increase the emission intensity of the molecules in the cloud 12 against the background, resulting in an improved detection of the molecules.

Please replace paragraph [0027] with the following paragraph:

**[0027]** Figure 2 is a plan view of a detection and analysis system 40 that detects chemical or biological aerosols in a test chamber 42, according to another embodiment of the present invention. In one embodiment, the aerosol is *bacillus subtilis* (BG) spores or Cab-O-Sil, which have diameters of about 1.5  $\mu\text{m}$  and 3.8  $\mu\text{m}$ , respectively, as an example aerosol. Cab-O-Sil is a trade name for fine powders of silicon oxide, which is manufactured by a combustion process. A fine powder of BG spores, Cab-O-Sil or other sample material is initially placed inside the test chamber 42. Fans 44 and 46 blow the fine powder into an aerosol that circulates inside the chamber 42.